In contrast, upon contacting a human skin, a solution of AGIIS having an acid normality of 28 N, would cause only a mildly warm sensation. There was no irritating effects and the solution did not cause chemical burn even after about 5 minutes at room temperature on the skin.

WHAT IS CLAIMED IS:

1. A prepared nutriment comprising:
a nutriment material; and
an acidic sparingly-soluble Group IIA complex ("AGIIS").

2. The prepared nutriment of claim 1, wherein the AGIIS is isolated from a mixture comprising a mineral acid and a Group IIA hydroxide, or a Group IIA salt of a dibasic acid, or a mixture of the two.

3. The prepared nutriment of claim 2, wherein the Group IIA hydroxide is calcium hydroxide, the mineral acid is sulfuric acid, and the Group IIA salt of a dibasic acid is calcium sulfate.

4. The prepared nutriment of claim 3, wherein the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid

having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

5. The prepared nutriment of claim 1, wherein the AGIIS, based on the total weight of the prepared nutriment, ranges from about 0.01 % to about 99.99 %.

6. The prepared nutriment of claim 1, wherein the nutriment material is food, feed, drink, food supplement, feed supplement, drink supplement, food dressing, pharmaceutical, biological product, seasoning, spices, flavoring agent, or stuffing.

7. A prepared nutriment comprising:

a nutriment material; and

AGIIS prepared by mixing calcium hydroxide and sulfuric acid with or without the addition of calcium sulfate.

8. The prepared nutriment of claim 7, wherein the sulfuric acid contains a predetermined amount of calcium sulfate.

9. The prepared nutriment of claim 7, wherein the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

10. The prepared nutriment of claim 7, wherein for every mole of sulfuric acid used, the amount of calcium hydroxide ranges from about 0.1 mole to about 0.5 mole.

11. The prepared nutriment of claim 7, wherein the nutriment material is food, feed, drink, food supplement, feed supplement, drink supplement, food dressing, pharmaceutical, biological product, seasoning, spices, flavoring agent, or stuffing.

12. A method for manufacturing a prepared nutriment comprising:

contacting AGIIS with a nutriment material.

13. A method for manufacturing a prepared nutriment comprising:

contacting AGIIS with a carrier to give a constituted carrier; and

blending the constituted carrier with a nutriment material.

14. A method for destroying organic odor in an environment, comprising:

spraying the environment with AGIIS.

15. A method for preserving or improving organoleptic quality of a beverage, a plant product or an

animal product, comprising: contacting the beverage, the plant product or the animal product with AGIIS.

16. The method of claim 15, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

17. A method for decreasing pH of AGIIS, the method comprising:

heating the AGIIS.

18. The method of claim 17, wherein the AGIIS is blended into food, feed, drink, food supplement, feed supplement, drink supplement, food dressing, pharmaceutical, biological product, seasoning, spices, flavoring agent, or stuffing.

19. A method for reducing biological contaminants in a nutriment comprising:

contacting the nutriment with AGIIS.

20. The method of claim 19, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid

with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

21. The method of claim 20, where the nutriment is a fresh fruit, a fruit product, a vegetable produce, a vegetable product, a meat, a meat product, a fish, a fish product, a food dressing, or a drink.

22. A method for reducing the pH of a nutriment comprising:

contacting the nutriment with AGIIS.

23. The method of claim 22, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

24. A method for reducing biological contaminants in an equipment comprising:

contacting the equipment with AGIIS.

25. The method of claim 23, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

26. The method of claim 24, wherein the equipment is a food-processing equipment, feed-processing equipment, drink-processing equipment, pharmaceutical equipment, construction equipment or micro-electronic equipment.

27. A method for preserving a consumable product, comprising:

contacting the consumable product with AGIIS.

28. The method of claim 27, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

29. The method of claim 27, wherein the consumable product is a plant product, an animal product, a pharmaceutical product, a biological product, or a medical device product.

30. A method for reducing the quantity of a biological toxin in a medium, comprising:

contacting the medium with AGIIS.

31. The method of claim 30, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

32. The method of claim 30, wherein the medium is a food, a feed, a pharmaceutical, an equipment, a packaging material, a drink, a biological product, water, or soil.

33. The method of claim 30, wherein the toxin is an animal toxin, a bacterial toxin, a botulinus toxin, a cholera toxin, a streptococcus erythrogenic toxin, a dinoflagellate toxin, a diphtheria toxin, an erythrogenic toxin, an extracellular toxin, a fatigue toxin, an intracellular toxin, a scarlet fever erythrogenic toxin, or a Tunnicliff toxin.

34. The method of claim 30, wherein the toxin comprises an endotoxin.

35. The method of claim 35, wherein the toxin comprises a mycotoxin.

36. A method for enhancing the bioavailability of a nutrient in a nutriment, comprising:

adding to the nutriment AGIIS.

37. The method of claim 36, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

38. The method of claim 36, wherein the nutrient is a carbohydrate, a protein, an enzyme, or an acid-stable vitamin.

39. A method for incorporating AGIIS into a dry nutriment, comprising:

adding AGIIS to a suitable carrier to give a premixed product, and

blending the premixed product with the dry nutriment.

40. The method of claim 39, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

41. The method of claim 39, wherein the suitable carrier is a methylcellulose, a psyllium, bran, rice hull or corn gluten.

42. A method for treating a cutaneous anomaly on an animal, comprising:

treating the cutaneous anomaly with AGIIS.

43. The method of claim 42, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

44. The method of claim 42, wherein the cutaneous anomaly is a wound or a burn.

45. The method of claim 44, wherein the wound is a mechanical wound, a spontaneous ulceration, a dermatitis, or an eruption.

46. The method of claim 44, wherein the burn is a chemical burn or a thermal burn.

47. A method for inducing clotting of blood in a bleeding tissue in an animal, comprising:

contacting the bleeding tissue with an AGIIS.

48. The method of claim 47, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

49. The method of claim 47, wherein the bleeding tissue is an external organ, an internal organ, a connective tissue, or a nerve tissue.

50. A method for enhancing the adhesion of a first tissue to a second tissue, comprising:

contacting AGIIS with the first tissue or both the first tissue and the second tissue; and

joining the first tissue with the second tissue.

51. The method of claim 50, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

52. The method of claim 50, wherein the first tissue and the second tissue are animal tissues or plant tissues.

53. A method for disinfecting a tissue, comprising:

contacting the tissue with AGIIS.

54. The method of claim 53, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

55. The method of claim 53, wherein the tissue is an animal tissue or a plant tissue.

56. A method for cleaning a product, comprising:
contacting the product with AGIIS.

57. The method of claim 56, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

58. The method of claim 56, wherein the product is a tissue, a microelectronic product, or a construction product.

59. The method of claim 58, wherein the construction product is new or reworked.

60. A method for synchronizing a harvest of a desired part of a plant, comprising:
contacting the desired part of the plant with AGIIS.

61. The method of claim 60, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid

with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

62. A method for preserving or improving organoleptic quality of a desired part of a plant, comprising:

contacting the desired part of the plant with AGIIS.

63. The method of claim 62, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

64. The method of claim 62, wherein the contacting of the desired part of the plant occurs prior to harvest, during harvest, during handling, or post harvest.

65. A method for reducing biological contaminants in water, comprising:

adding to the water a sufficient amount of AGIIS to reduce the biological contaminants.

66. The method of claim 65, wherein the AGIIS is prepared by mixing calcium hydroxide with sulfuric acid with or without calcium sulfate added thereto, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

67. The method of claim 65, wherein the water is portable water, storm sewer water, or sanitary sewer water.

68. A method for preparing AGIIS comprising:

preparing an aqueous solution of a mineral acid;

preparing an aqueous solution or slurry of a Group IIA hydroxide or a Group IIA salt;

mixing the aqueous solution of the mineral acid with the aqueous solution or slurry of the Group IIA hydroxide or the Group IIA salt;

removing solid formed to isolate AGIIS, and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

69. A method for preparing AGIIS comprising:

mixing a mineral acid in water with a Group IIA hydroxide and the resultant AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

70. The method of claim 69, wherein the mineral acid is sulfuric acid and the Group IIA hydroxide is calcium hydroxide.

71. The method of claim 70, wherein for every mole of sulfuric acid used, the amount of calcium hydroxide ranges from about 0.1 mole to about 0.5 mole.

72. A method of preparing AGIIS comprising:

adding a predetermined amount of calcium sulfate to an aqueous solution of concentrated sulfuric acid to give a mixture;

adding a calculated amount of slurry of calcium hydroxide in water to the mixture to give a reacted mixture;

removing solid formed in the reacted mixture to give the AGIIS; and the and the AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of

calcium sulfate in sulfuric acid having the same acid normality, and wherein the AGIIS is non-volatile at room temperature and pressure.

73. The method of claim 72, further comprising introducing gaseous carbon dioxide into the mixture of the sulfuric acid containing calcium sulfate and the calcium hydroxide.

74. The method of claim 70, wherein for every mole of sulfuric acid used, the amount of calcium hydroxide ranges from about 0.1 mole to about 0.5 mole.

75. A method for preparing AGIIS having a desired final acid normality, comprising:

(a) determining the amount of a mineral acid needed by the following equation:

$$E_1 = (N/2) + (N/2 + B)$$

wherein E_1 is the amount of the mineral acid, in moles, required before making purity adjustment; N is the desired final acid normality; and B is the mole ratio of a Group IIA hydroxide to the mineral acid needed to obtain the AGIIS having N, and B is derived from a pre-plotted curve depicting the relationship of the mineral acid and the Group IIA hydroxide for a desired N;

(b) making purity adjustment for the mineral acid used by the following equation:

$$E_2 = E_1/C$$

wherein E_2 is the amount of the mineral acid, in moles, required after purity adjustment; E_1 is as defined above; and C is the purity adjustment factor for the mineral acid;

(c) determining the amount of water, in ml, needed to be added to the mineral acid by the following equation:

$$G = J - E_2 - I$$

wherein G is the amount of water, in ml, required to be added to the mineral acid; J is the final volume of aqueous mineral acid solution; I is the volume amount of Group IIA hydroxide needed, given below; and E_2 is as defined above;

(d) adding G to E_2 to give the final aqueous solution of the mineral acid, wherein both G and E_2 are as defined above;

(e) determining the amount of Group IIA hydroxide, in moles, needed by the following equation:

$$F_1 = N/2 \times B$$

wherein F_1 is the amount of Group IIA hydroxide, in moles, needed before making purity adjustment; and B and N are as defined above;

(f) making purity adjustment for the Group IIA hydroxide used by the following equation:

$$F_2 = F_1/D$$

wherein F_2 is the amount of the Group IIA hydroxide, in moles, required after purity adjustment; F_1 is as defined above; and D is the purity adjustment factor for the Group IIA hydroxide;

(g) determining the amount of water, in ml, needed to make the solution or slurry of Group IIA hydroxide by the following equation:

$$H = F_2 \times 1.5$$

wherein H is the amount of water, in ml, needed to make the solution or slurry of Group IIA hydroxide; and F_3 is as defined above;

(h) determining the amount of the aqueous solution or slurry of Group IIA hydroxide, in ml, needed to be added to the aqeuous solution of mineral acid to give the AGIIS with a desired final acid normality by the following equation:

$$I = F_2 \times 2$$

wherein I is the amount of Group IIA hydroxide solution or slurry, in ml, needed; and F_2 is as defined above;

(i) adding H to F_2 to give the final aqueous solution or slurry of Group IIA hydroxide, wherein both H and F_2 are as defined above;

(j) adding the final aqueous solution or slurry of Group IIA hydroxide of (i) to the final aqueous solution of mineral acid of (d);

(k) allowing the final aqueous solution or slurry of Group IIA hydroxide and the final aqueous solution of mineral acid of (j) to react; and

(l) removing solid formed from(K).

76. The method of claim 75 further comprising adding a Group IIA salt of a dibasic acid to the final aqueous mineral acid solution of (d).

77. The method of claim 76, wherein the mineral acid is sulfuric acid, the Group IIA hydroxide is calcium hydroxide, and the Group IIA salt of a dibasic acid is calcium sulfate.

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78. The AGIIS having a desired final acid normality prepared by the method of claim 75.